**B.Sc. DEGREE EXAMINATION, APRIL 2017.**

**I YEAR — II SEMESTER**

**Major Paper-IV INTEGRAL CALCULUS AND FOURIER SERIES**

**Time : 3 hours Max. Marks : 75**

**SECTION A — (10 × 2 = 20 marks)**

**Answer any *TEN* questions**

1. Evaluate
2. Evaluate
3. Evaluate
4. Change the order of integration in
5. Write the relation between Beta and Gamma function.
6. What values of n, Ѓ(n) is undefined?
7. If f(x) is an even function defined in the value of bn is ----------
8. Can tan x be expanded in Fourier series.
9. Write the Euler’s formula of f(x) in
10. If f(x) is defined in (0 , l) , the value of bn is ---------------
11. Evaluate dx.
12. State Benoulli’s formula for integration.

**SECTION B — (5 × 5 = 25 marks)**

**Answer any *FIVE* questions**

1. Evaluate
2. Evaluate over the area of circle x2 + y2 = a2 .
3. Evaluate
4. Express f(x) = x(2 as a Fourier series in (0, 2
5. Find the half range sine series of f(x) = 1-x in
6. Evaluate over the positive octant of the sphere x2 + y2 + z 2 = a2 .
7. Evaluate, by changing the order of integration,

[P.T.O.]

**SECTION C — (3 × 10 = 30 marks)**

 **Answer any *THREE* questions**

1. If  m and n being positive integers,

prove that and also deduce that

1. Change the order of integration in the integral

and evaluate it.

1. Express 10 *dx* in terms of Gamma functions and evaluate the 10 *dx.*
2. Expand in a Fourier series in the interval
3. Obtain Fourier series for f(x) of period 2*l*, defined by

**————————**